

REMARKS

Claims 1-8, 10-20 and 22-25 are pending in the application. In the Office Action at hand, those claims are rejected.

In particular, Claims 1, 2, 8, 10-14, 20 and 22-25 are rejected under 35 U.S.C. §102(e) as being anticipated by Takayama (U.S. 6,188,075). In addition, Claims 3-7 and 15-17 are rejected under 35 U.S.C. §103(a) as being unpatentable under Takayama in view of Karlen (U.S. 5,155,423). In response to the Section 102(e) and 103(a) rejections, the Applicant respectfully submits that Claims 1-8, 10-20 and 22-25, as amended, are not anticipated or obvious in view of the Takayama and Karlen patents. Reconsideration is respectfully submitted.

Claim 1, as amended, recites an apparatus for irradiating surfaces including an electron beam generator for generating a beam of electrons. The beam of electrons exits the electron beam generator through an exit window. A robotic device moves the beam of electrons over the surfaces to irradiate selected regions of the surfaces. The robotic device can include a propulsion system for propelling the robotic device in a manner where the entire robotic device is capable of traveling to desired locations. The robotic device is capable of controllably spacing the exit window of the electron beam generator a desired distance away from the surfaces as the electron beam generator is moved over the surfaces.

Claim 13 recites a method of irradiating surfaces and Claim 25 recites a method of forming an apparatus for irradiating surfaces. Claims 1, 13 and 25 have been amended to recite "the robotic device including a propulsion system for propelling the robotic device in a manner where the entire robotic device is capable of traveling to desired locations." Support for these amendments is found at least in Figs. 10-23 as well as on page 14, line 18 through page 24, line 10 of the Specification as originally filed. No new matter is introduced.

In the present invention, the propulsion system can make the robotic device mobile and can drive the whole or entire robotic device, including its base, to desired locations for use. This can enable the robotic device to travel to a location to irradiate surfaces that were previously out of reach. For example, in Figs. 11, 13 and 14, the robotic device can travel to different locations within a room 112 so that surfaces of different areas of the room 112 can be irradiated by an electron beam generator on a maneuverable arm 99. Furthermore, in Fig. 17, the robotic device

can travel around an object 115 for irradiating the exterior surfaces. In addition to irradiating areas that can be distant from each other, large continuous surfaces or areas can be irradiated. For example, a floor of any size can be continuously irradiated. Such a propulsion system can provide maneuverability and flexibility, and allows large rooms or objects to be irradiated, including those with unusual geometry. Fig. 23 depicts another example where the robotic device can be conveyed on a track 152 for irradiating objects 115.

In contrast, Takayama discloses in Fig. 6 an arm driving robot 23 having a main body 20 and optical sensor 21 that are mounted to an articulated expansion arm 22. The main body 20 includes an irradiation tube 27. Only the arm 22 is driven for moving the irradiation tube 27 over the surfaces of a substrate 30, as can be seen in Fig. 6 and described on Column 8, lines 5-23. The location of the base of the robot 23 remains stationary, so that the entire robot 23 never travels to desired locations.

Accordingly, Claims 1, 2, 8, 10-14, 20 and 22-25, as amended, are not anticipated in view of Takayama since Takayama does not teach or suggest a “robotic device including a propulsion system for propelling the robotic device in a manner where the entire robotic device is capable of traveling to desired locations”, as recited in base claims 1, 13 and 25, as amended. Therefore, Claims 1, 2, 8, 10-14, 20 and 22-25, as amended, are in condition for allowance. Reconsideration is respectfully requested.

Karlen discloses a robot having an arm with a series of roll joints 2, 6, 10, and 14, and a series of pitch joints 4, 8 and 12. The robot itself in Karlen is stationary and does not travel.

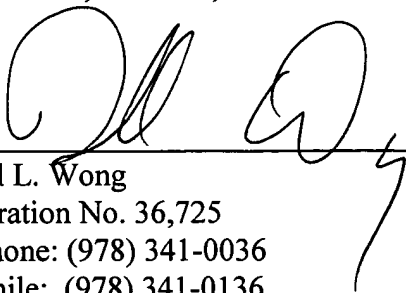
Accordingly, Claims 3-7 and 15-17 are not obvious in view of Takayama and Karlen, since neither reference, alone or in combination, teaches or suggests a “robotic device including a propulsion system for propelling the robotic device in a manner where the entire robotic device is capable of traveling to desired locations,” as recited in base Claims 1 and 13, as amended. Therefore, Claims 3-7 and 15-17 are in condition for allowance. Reconsideration is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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Dated: 5/2/2006